The movement and survival of colour-ringed Herring Gulls *Larus argentatus* and Lesser Black-backed Gulls *Larus fuscus* following rehabilitation at the Secret World Wildlife Rescue Centre, East Huntspill, Somerset.

By
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The project began following discussions about the possibility of ringing rehabilitated birds at Secret World as a means of monitoring their survival after release. The reporting rate for the metal rings used in general ringing by the British Trust for Ornithology (BTO) is quite low so we set up a colour-ringing project. Large gulls were thought to be the best candidates for the study as the number released (around 80 per year) would give a significantly large sample. Through our contact with Peter Rock and his work with a very large, long-term study with urban gulls, we were aware that the sighting/reporting rate for colour-ringed gulls is high. The recovery rates for these two species for metal rings alone are only between 3 and 6% per year (P. Rock *pers comm*).

Fig 1. (Left) S:143 photographed at Chipiona Harbour, Portugal by Rafa Garcia on 5th January 2013.

Fig 2. (Right) One of the large pens where the gulls were cared for until ready for release.

Licences to ring rehabilitated birds and use colour-rings within the UK were obtained from the BTO. For anyone interested in ringing rehabilitated birds the BTO make an up-front surcharge based on the estimated number that will be processed at 50 pence per bird. This is recalculated for each year of the study. The codes were allocated by Peter Rock, the 'Large Gull' colour-ringing coordinator, with the BTO metal ring on the right leg and the colour-ring below the tarsus on left leg. Colour rings were red with white characters using code S:001 to S:999 (except the 'colon' to be 3 dots). These were made by a firm based in Poland called Interrex which were of excellent quality. In order that observers can report sightings the scheme also needs to be registered on the cr-birding WebPages. In fairness, anyone joining a colour-ringing scheme needs to make the commitment to help find colour-ringed birds. An example is shown here (Figure 1) of a juvenile Lesser Black-backed Gull (S:143) sighted in Portugal. It is also expected that the ringer replies promptly with interesting information about the scheme to the people who have taken the time and trouble to send in any sighting - otherwise all of the colour ringing schemes get a bad name.

Fig 3. Identification of juvenile Herring and Lesser Black-backed Gulls based on the colour and patterning of the inner primaries. In Herring Gull (on the left) these are light grey and mottled and in Lesser Black-backed Gull (right) they are a plain darker, mid-grey.

Sightings have come in fairly steadily (at approximately one per week). The picture (Fig. 2) was sent with an Email explaining the project and to thank people that had reported one of the gulls. This also included any 'history' from earlier sightings.

The separation between juvenile Herring and Lesser Black-backed Gulls was known to be rather difficult and Ed Drewitt kindly prepared a PowerPoint presentation to show the main charcteristics that can be used to tell them apart. The clearest difference between the two species can be seen in the colour and any patterning of the inner primaries (Fig. 3). In Herring Gull these are light grey and mottled and in Lesser Black-backed Gull they are a plain darker-grey. However, these descriptions represent the ends of a spectrum and some birds were noted with intermediate characters having darkish grey inner primaries but with some mottling. Three birds, based on photographic evidence from recorders, were shown to have been misidentified. In all cases these were recorded as Herring Gulls that later proved to be Lesser Black-backed Gulls. In practice it is the darkness of the grey, rather than the mottling, that proved to be the most important feature.

Results - Movement

The following maps show where the gulls have been sighted: (Fig. 4) the southern counties of England and Wales; (Fig. 5) France, Morocco, Portugal and Spain. For Herring Gulls the positions and the number of sightings are indicated with a blue circle and for Lesser Black-backed Gulls a yellow circle. For clarity, nearby sites and totals have been amalgamated.

Fig 4, (Above) Map showing the locations where Herring Gulls (blue) and Lesser Black-backed Gulls (yellow) have been sighted in the southern counties of England and Wales.

Fig 5. (Right)Map showing the locations where the Secret World Herring Gulls (blue) and Lesser Black-backed Gulls (yellow) have been sighted in France, Spain, Portugal and Morocco.

Over 2,000 Herring and Lesser Black-backed Gulls are ringed every year in the UK and the results from the recoveries have been published by the BTO (Wernham, 2002). In summary, Herring Gulls do disperse and mainly remain within the UK although small numbers of juveniles from southern England are likely to go to the French and Spanish coasts. Immature and some adult Lesser Black-backed Gulls migrate in the autumn to winter in south-west Europe and north-west Africa. This was clearly demonstrated when a GPS tagging project by the BTO, intended primarily to study adult Lesser Black-backed Gulls interaction with wind farms, also tracked the winter movements of the 25 birds involved. Although some adults remained in the UK, others migrated using a variety of routes through France, Spain and Portugal to Morocco (Ross-Smith 2013). Thus the recovery pattern of the Secret World rehabilitated birds mirrors the dispersal pattern displayed by those that are reared naturally.

Richard Thompson, in a twelve year study at the Mallydams Wood wildlife rehabilitation centre, found that young rehabilitated Herring Gulls would disperse further afield than their naturally-reared counterparts. The mean overall distance travelled by rehabilitated birds was 74.3 km compared with 54.8 for non-rehabilitated birds from the South-West and 59.0 for non-rehabilitated birds from the South-East (Thompson 2013). This presumably reflects the 'orphan' and 'homeless' status of rehabilitated juveniles upon release.

Results - Survival - The Secret World Herring Gulls

The typical lifespan for Herring Gulls is 12 years with a maximum recorded age of 30 years 11 months 15 days (BirdFacts, BTO website). Clearly this project has not been running for sufficient time to allow us to make any comparison with these figures. We can, however, look at the reporting rates for Secret World birds ringed between 2011 and 2013 and discuss these in the context of data from some other sources. The graph (Fig. 6) plots the number of Herring Gulls that are known to have survived for a specific number of months since release. Table 1 shows the reporting rate so far for birds seen at least once.

Secret World	Colour ringed	reported	%
Herring Gull	184	56	30.4

Table 1. The reporting rate so far for Herring Gulls seen at least once.

Thompson (2013) published the recovery rates for colour-ringed, rehabilitated Herring Gulls at the Mallydams Wood wildlife centre, also for non-rehabilitated (wild) birds from a colony in south-east England and the Severn Estuary. The number of BTO ringed, non-rehabilitated Herring Gulls by 2012 was 343,206 with total recoveries of 25,912 (Dadam et al 2013) giving a recovery rate of 7.5%. However this lower figure is far more to do with the difference in the reporting rate where only a BTO metal ring has been used. The extent to which the BTO recoveries also includes colour ringed birds is not known.

Type	Study centre	study period	% recovery
rehabilitated	Secret World	3 years	30.4
rehabilitated	Mallydams Wood	12 years	30.7
wild	Colony in S.E England	4 years	22.9
wild	Severn Estuary Gull Group	30 years	73.7
wild	BTO (mainly metal rings)	75 + years	7.5

Table 2. Comparison of recovery rates for Herring Gulls.

From the table above the recovery rate so far for the Secret World birds is comparable with the 12-year study at the Mallydams Wood wildlife centre and the 4 year study of wild birds in a colony in south-east England. The very high recovery rate of 73.7% by the Severn Estuary Gull Group is due to an enormous effort to re-sight and identify individually ringed birds with many hours of fieldwork on landfill sites and at urban breeding colonies. Thus the variables such as the length of the study period, observer effort and use of colour rings versus just metal rings make it difficult to gain a direct comparison with the data from other sources. However, all the indications are that the rehabilitated Herring Gulls released by Secret World are surviving well and that their survival is certainly on a par with other studies.

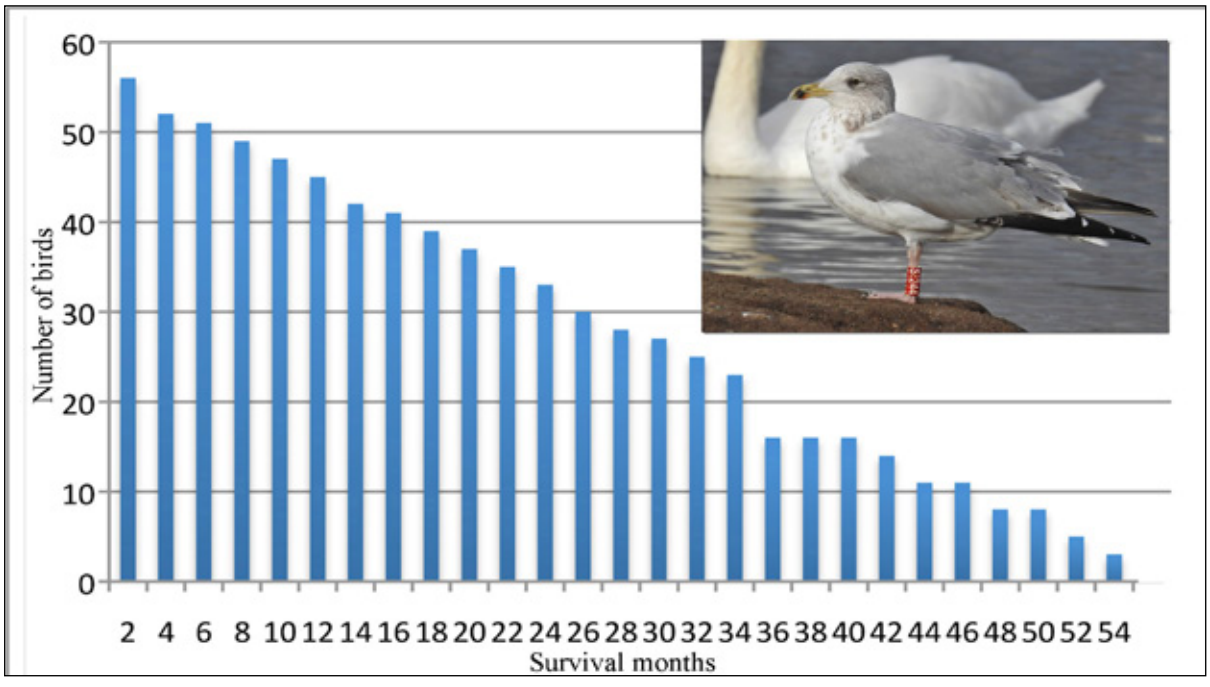

Fig 6. Minimum survival. The number of months that the 56 Secret World Herring Gulls are known to have survived. Inset: S:244 (BTO ring GF24899) photographed at Par Sands, Fowey, Cornwall on 25th January 2016 by John Sanders. Original ringing and release at Apex Park, Burnham-on-Sea, Somerset on 17th July 2013.

Results - Survival - The Secret World Lesser Black-backed Gulls

The typical lifespan for Lesser Black-backed Gulls is 15 years with a maximum recorded age of 34 years 10 months 11 days (BirdFacts, BTO website). The graph (Fig. 7) plots the number of Lesser Black-backed Gulls that are known to have survived for a specific number of months since release.

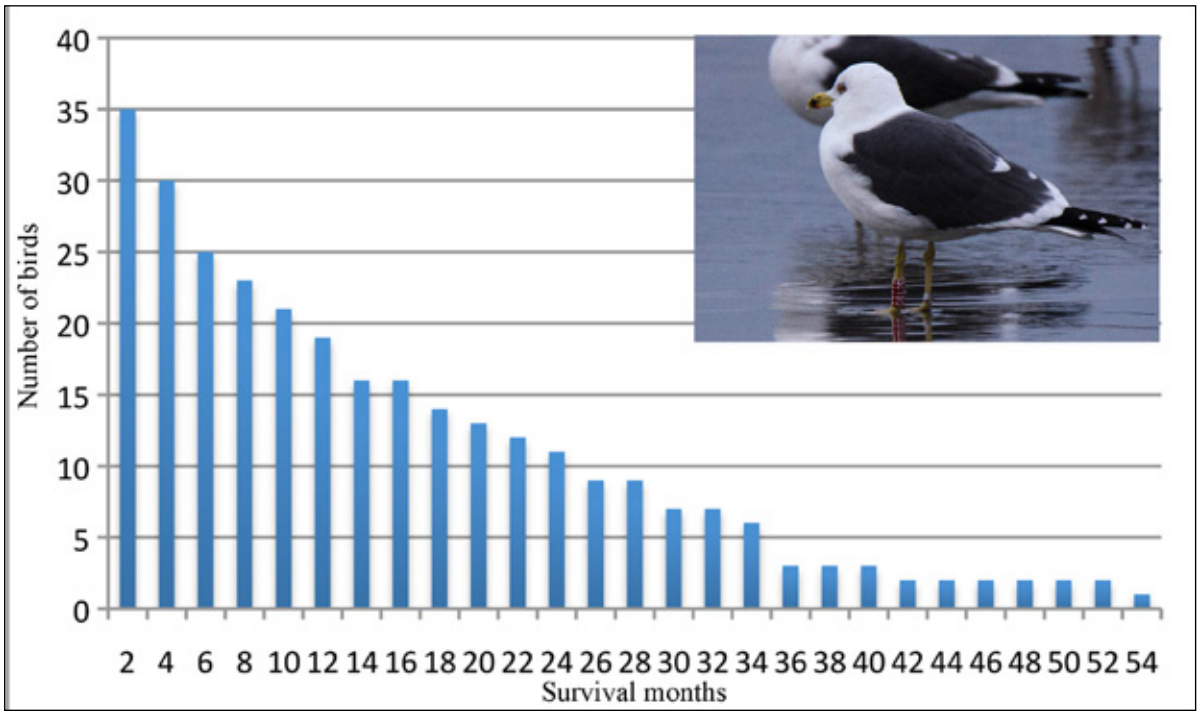

Fig 7. Minimum survival. The noumber of months that the Secret World Lesser Black-backed Gulls are known to have survived. Inset: S:195 (BTO ring GR43152) photographed at Matoshinos Beach, Portugal on 25th March 2016 by Jose Marques. Original ringing and release at Highbridge, Somerset on 27th August 2012.

I have not found any studies with which we can compare the recovery rates for Lesser Black-backed Gulls other than the ringing totals provided by the BTO with 207,232 ringed and total recoveries of 34,197 (Dadam Op. cit.) giving a recovery rate of 16.5%. The reporting rate so far for birds released by Secret World and seen at least once is an impressive 58.3% (Table 3).

Secret World	Colour ringed	reported	%
Lesser B-b Gull	60	35	58.3

Table 3. The reporting rate for Lesser Black-backed Gulls seen at least once

The difference in reporting rates for the two species:

Table 4 gives the recovery rates for both the colour-ringed Herring and Lesser Black-backed Gulls from Secret World. The difference is significant ($x^2 = 5.61$, $P < 0.05$). This can also be seen in Table 5 which compares the percentage reporting rate for Secret World birds with the national BTO scheme. The question that arises is:'Why should the reporting rate for Herring Gulls be approximately half that of Lesser Black-backed Gulls in both data sets?'.

	Herring Gull	Lesser B-b Gull
Secret World colour ringed	184	60
Number of recoveries	56	35

Table 4. The reporting rate for Herring Gulls and Lesser Black-backed Gulls from Secret World.

	Herring Gull	Lesser B-b Gull
Secret World birds reported %	30.4%	58.3%
Reported nationally to BTO %	7.5%	16.5%

Table 5. The percentage reporting rate for Herring Gulls and Lesser Black-backed Gulls.

From the reporting and the considerable amount of correspondence that has been involved in monitoring the Secret World birds it is apparent that there are some very dedicated gull watchers in Portugal and Spain so, in this study, the explanation probably rests with observer bias. Presumably this also feeds into the difference for the BTO scheme.

Summary

184 Herring Gulls and 60 Lesser Black-backed Gulls were colour-ringed and released after rehabilitation by the Secret World Wildlife Centre between 2011 and 2013. The recovery rate by December 2015 for Herring Gulls was 30.4% and for Lesser Black-backed Gulls was 58.3%.

The dispersal patern of the released birds conformed with the known migration patterns of the two species, with Herring Gulls tending to remain in Southern England and Lesser Black-backed Gulls moving to south-west Europe in the winter months. In other words, they behave normally!

Gulls are fiesty birds and respond well to care. The post-release survival rates indicate that the protocols for care at Secret World give results that are comparable to the survival rates found in other studies investigating rehabilitated and 'wild' birds.

Acknowledgements

Thanks go to all of the people, mainly birdwatchers but also general members of the public, who took the time and trouble to report their sightings such as S:198 below (Fig. 8). The staff at Secret World who care for the gulls on a daily basis including Sara Cowen, Martin Kendall and Pauline Kidner with whom we had the most contact. Peter Rock for advice and help in organising the colour ringing scheme. The ringers: Chris Craig, Ed Drewitt, George Gay, Paul Gay, Patrick Hancock, Adele Powell, Tim Ridgers-Steer, Andy Slade and Nick Stephens.

References

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Fig 8. Juvenile Lesser Black-backed Gull S:198 released at Apex Park, Burnham-on-Sea on 27 August 2012. It was seen on many dates during the winters of 2012, 2013 and 2014 at Quarteira Beach, Faro, Portugal. Photograph courtesy Michael Davies